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Agricultural Memorandum No. 804

'Work-day' sequences in South-East England

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Estimates of the frequency of occurrence of 'work-days' for different methods of grass conservation have been the subject of a number of Agricultural Memoranda (eg. 210, 531, 547, 574, 700) and MAFF reports.

This memorandum presents results of such an investigation applied to twelve stations distributed across S.E. England (fig. 1) for the period May to September based on data extracted for the years 1949-68.

Definitions

Taking a "dry day" as one with a rainfall amount of not greater than 0.01 inch (0.25 mm), a work day is defined as a dry day followed by various numbers of dry days for various methods of conservation and their requirements: (as laid out in Ag Mem 574).

i) Direct cut silage - one work day
ii) Wilted silage - one work day followed by one dry day
iii) Barn hay - one work day followed by 2 dry days
iv) Quick hay - one work day followed by 3 dry days
v) Slow hay - one work day followed by 4 dry days.

The season, from May to September, was divided into 10 half monthly periods (15 or 16 days length). Providing one considers that the decision is made and the work started on the first work day, there is no difficulty in dealing with dry spells which overlap contiguous periods. In the following sequence D represents a dry day and W a wet one.

W/DDWWWDDWWWDDDDD/DDDWWD

The count of work days in the various conservation classes for the complete 15 day period is then:

i) 9 - number of 1 + 0 work days
ii) 7 - number of 1 + 1 " "
iii) 5 - number of 1 + 2 " "
iv) 5 - number of 1 + 3 " "
v) 4 - number of 1 + 4 " "

The first day of a sequence is thus the 'decision day' as to the conservation method to be employed over the other dry (work) days.

Data extraction and presentation

For each station cumulative frequency curves for half-monthly periods from May to September were plotted in the form: "number of years with N or more runs of n work days (WDs) as a function of $N^{(n)}$ (n=1,2,3,4 and 5), and smooth ogive families drawn by hand (after Ag Mem 547). Frequencies attained 1 year in 4, 1 year in 2, 3 years in 4 and 9 years in 10 were estimated from the curves; the complete results are presented in Tables 1 to 6.

Figures 2 to 6 are diagrammatical summaries of the distribution of the total number of sequences of 1 to 5 WDs occurring in the first half of May (designated I May) over 20 years (1949-68). These figures illustrate the general form of the WD distribution for any of the half-monthly periods - that is a well defined minimum in the Oxford/Wisley region and an equally clear maximum in the vicinity of Barming, sometimes with subsidiary maxima near Corfe Mullen and Aylesbury.

A graphical summary of tables 1-6 for a one WD spell is given in fig. 7. Generally the upper limit to the histograms can be defined by the Barming data and the lower limit by the Oxford data. Histograms for other WD sequences are similar although, of course, the total number of spells decreases with the increasing length of spell.

Outstanding features of fig. 7 are the minimum occurring in WD occurrences in the first half of August (I August) and the maxima in II July and II August (although the geographical/topographical distribution of WDs in each half-month are similar, as discussed). No correlation with annual nor summer rainfall totals was apparent.

If extrapolated in time, such information has clear implications for agriculturalists but one must ask whether such a temporal frequency distribution is a function of the data period chosen. (Forsdyke, Ag Mem 574, anticipates this possibility in his final paragraph).

Lamb classification.

The frequencies of 'Lamb weather types' were derived from a computer print-out for the period 1949-68 and grouped in terms of four types: Westerly, W , Anticyclonic, A, Cyclonic, C and Others, O. Table 7 presents the frequency distribution of the daily weather type for the July/August period:

Table 7

	I July	II July	I August	II August
W	77	84	52	78
A	98	129	72	109
C	88	75	125	85
O	37	32	51	48

A marked increase in Cyclonic type in I August period is clear; indeed the table accounts well, qualitatively, for the observed frequency distribution of WDs in July/August. An important step now is to see if this distribution changes significantly over the years.

Looking at the July/August period for the years 1929-48:

Table 8

	II July	I August
W	134	124
A	60	81
C	72	60
O	54	35

Indications here are of an overall predominance of W-type and an increase in A-type in I August compared with II July.

The most recent data (1969-74) give:

Table 9

	II July	I August
W	37	32
A	31	21
C	23	28
O	5	9

- if anything a balance in favour of C type in I August but nothing like the clear-cut distribution in Table 7.

The problem of work day frequency prognostication even if based on recent data is evident!

Silage and Haymaking

We may rank the potential of the 12 stations for silage and haymaking by summing the frequencies of relevent combinations of work days (although at any particular time any one conservation method might be inappropriate for a variety of reasons).

Table 10. Silage Potential

				'Top Three' periods	'Bottom Three'
1.	Barming	7	Watford	II July	I August
2.	Corfe Mullen	8	Heathrow	II May	I September
3.	Great Dixter	9	Falmer	I June	II September
4.	Horsham	10	Andover		
5.	Aylesbury	11	Wisley		
6.	Canterbury	12	Oxford		

(Silage Index = No of single WDs + No of 2.WDs)

Table 11. Haymaking Potential

				Top Three	Bottom Three
1.	Barming	7	Heathrow		
2.	Corfe Mullen	8	Andover	II July	I August
3.	Aylesbury	9	Watford	II June	I September
4.	Great Dixter	10	Canterbury	II May	I July
5.	Horsham	11	Wisley		
6.	Falmer	12	Oxford		

(Haymaking Index = No of 3 WDs + No of 4 WDs + No of 5 WDs).

The tables illustrate the general remarks made in the light of figs 2-7. Although Barming/Corfe Mullen and Oxford/Wisley define the extremes of the ranking for both silage and haymaking potential, there is a certain amount of 'rank shuffling' between the other stations (Canterbury in particular: 6th for Silage, 10th for haymaking). A similar comment applies to the suitability - ranking of the half-month periods.

The influence of the marked singularities may be reduced by smoothing the indices over 4 or even 6 week periods thereby, perhaps, producing a more suitable prognostic technique. While not influencing the relative conservation potential of areas, this smoothing produces the following ranking of the half-month periods.

Table 12	4 - weekly smoothing		6 - weekly smoothing	
	Silage	Haymaking	Silage	Haymaking
Top Three	II May–I Jun	I–II Jun	II May–II Jun	II May–II June
	I Jun–II Jun	II May–I Jun	II June–II July	II May–II July
	I July–II July	I–II May	I June–I July	I May–I July
Bottom Three	I–II Sept.	I–II Sept	I Aug–I Sept	I Aug–I Sept
	I–II August	I–II August	II Aug–II Sept	I July–I Aug
	II Aug–I Sept	II July–I August	I July–I Aug	II Aug–II Sept.

The overall best period for silage and haymaking is the month or so centred on the beginning of June; the worst period is in August/September.

Dry Spells in Earlier Decades

In 1953 the Agricultural Branch of the Meteorological Office produced a report for MAFF on 'Spells of Dry Weather in South-East England!' Twenty-six stations were used and the monthly data referred, whenever possible, to the period 1921–46. Dry spells were credited to the month with the greater number of dry days and results were derived in terms of the frequencies of occurrence of 1 or more, 2 or more, 3 or more etc., dry days.

Overall similarities are seen between the 1921–46 distribution of monthly frequency of 3 or more dry days (Fig 8) and the half-monthly totals for 1...5 work days in Figs 2–6. Dry-day distributions for April to September were summarised in the 1953 Report as follows.

....'regions most likely to suffer (!) from long dry spells:'

a) Isle of Wight and south coast west of Beachy Head.
b) Part of Hampshire on eastern edge of Salisbury Plain.
c) Goudhurst (near Tunbridge Wells) and Canterbury areas.

Regions likely to suffer least:

a) Oxford area
b) Selborne area of Hampshire
c) Coast around Eastbourne.

Thus the basic geographical/topographical distribution of work-day frequencies has remained basically unchanged over the period 1921–68.

The seasonal suitability for haymaking was summarised from Table V of the 1953 Report:

i) June is the best month at every station, except Goudhurst where May is best
ii) May and August are almost equally good
iii) July is at most the third best month; nowhere is it better than May.

These findings may be contrasted with Fig 7 and Table 11 which indicate II July as the best haymaking period and I August the worst. (based on half monthly data).

By smoothing, as in Table 12, the best period for haymaking (and silage) becomes centred on the beginning of June, in harmony with i) above; the August/

September period is the worst.

In summary, then for the SE region:

a) we may point out the similar geographical/topographical distribution of the frequency of occurrence of dry weather spells of between 1 and 5 days duration, and their apparent persistence over some 50 years while drawing attention to

b) the possibility of seasonal singularities in weather type on the scale of a decade or so, which can make prognostication as to favourable or adverse periods for conservation an unreliable exercise.

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

May 1976.

APPENDIX

Table 1

Andover

Sequence of work days	1				2				3				4				5			
	1 yr in 4	1 yr in 2	3 yrs in 4	9 yrs in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	11	8	7	5	8	6	5	3	7	4	3	2	6	3	2	1	4	2	1	1
II	12	10	8	5	10	8	5	2	8	6	4	1	7	5	3	1	6	4	2	1
I June	12	8	8	6	10	7	5	4	8	5	3	2	7	4	2	1	6	3	1	1
II	12	11	8	5	10	8	5	3	8	6	3	2	7	4	2	1	5	3	1	1
I July	12	9	7	5	9	6	4	1	7	4	2	1	6	3	1	1	5	1	1	0
II	14	11	7	4	12	8	4	1	9	5	2	1	7	4	1	1	6	3	1	0
I Aug	10	7	6	4	7	4	3	2	5	3	1	1	3	2	1	1	2	1	1	0
II	13	10	7	5	11	7	4	2	9	5	2	1	7	3	1	1	6	2	1	0
I Sep	10	8	7	6	8	5	4	2	6	4	2	1	6	3	1	1	5	2	1	0
II	11	8	6	4	9	6	3	1	8	4	1	1	6	3	1	0	5	2	1	0

Av. Annual Rainfall R = 754 mm
Av. May-Sept. Rainfall r = 302 mm.

Aylesbury

I May	11	9	7	5	10	7	5	3	8	5	2	1	7	4	2	1	6	3	1	0
II	12	10	8	6	10	7	5	3	8	5	3	2	7	4	2	1	5	3	1	1
I June	12	10	8	7	9	7	5	3	7	4	3	1	6	3	2	1	5	1	1	0
II	12	10	9	6	9	8	5	3	8	6	4	2	6	4	2	1	5	3	1	1
I July	11	9	8	6	8	6	4	3	6	4	2	1	5	3	1	1	4	2	1	0
II	14	11	8	6	11	8	5	2	10	6	3	1	8	5	2	1	6	3	1	1
I Aug	10	7	6	4	7	5	3	1	6	4	1	1	5	2	1	1	3	1	1	0
II	13	10	8	5	11	7	4	2	9	6	2	1	9	4	1	1	7	3	1	0
I Sep	10	8	7	6	8	6	4	2	6	4	2	1	5	3	1	1	4	2	1	0
II	12	9	7	5	10	7	4	2	8	5	2	1	7	3	1	1	5	2	1	0

R = 634
r = 319

Table 2

Barming

Sequence of work days:	1				2				3				4				5			
	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	11	10	8	6	9	7	5	3	8	6	3	1	7	4	2	1	6	2	1	1
II	14	11	8	6	11	9	6	3	9	7	4	1	8	5	2	1	6	3	1	1
I June	13	11	9	7	10	8	6	5	9	6	4	3	7	5	3	2	6	3	2	1
II	12	10	8	6	10	8	5	3	9	6	3	2	7	5	2	1	6	3	1	1
I July	12	10	8	6	10	7	5	3	7	5	3	1	5	3	2	1	4	2	1	1
II	14	12	9	7	12	9	6	4	11	7	4	2	9	5	2	1	7	4	1	1
I Aug	11	9	8	6	8	7	5	3	6	5	3	1	5	3	2	1	4	2	1	1
II	14	11	9	6	11	8	5	2	9	6	2	1	8	4	1	0	6	3	1	0
I Sep	11	8	7	5	9	5	4	2	7	4	2	1	5	3	1	1	4	2	1	0
II	12	9	7	5	9	6	4	3	7	4	2	1	6	3	1	1	4	2	1	1

R = 670
r = 275

Canterbury

I May	11	10	7	5	9	6	4	2	8	5	3	1	7	3	1	1	6	2	1	0
II	12	10	8	6	9	7	5	4	8	5	4	3	7	4	3	2	6	3	2	1
I June	12	10	8	6	10	7	5	4	9	5	3	2	7	4	2	1	6	3	1	1
II	12	10	8	6	10	7	5	4	8	5	3	2	7	4	2	1	6	3	1	1
I July	12	9	7	6	9	5	3	2	7	3	1	1	6	2	1	0	4	1	1	0
II	13	12	10	8	11	9	6	3	9	6	4	1	7	4	2	1	6	3	1	0
I Aug	9	8	7	5	7	5	3	2	5	3	2	1	4	2	1	0	3	1	1	0
II	12	10	8	6	10	7	4	2	9	5	2	1	7	4	1	1	5	2	1	0
I Sep	11	9	8	6	8	6	4	3	6	4	2	1	5	2	1	1	4	1	1	0
II	10	9	7	5	8	6	4	2	6	4	2	1	4	2	1	1	3	1	1	0

R = 664
r = 264

Corfe Mullen

Table 3

Sequence of work days:	1				2				3				4				5			
	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	11	8	7	5	10	6	4	2	8	5	3	1	7	4	2	1	6	3	1	1
II	13	10	7	6	11	8	5	3	10	6	3	1	9	5	2	1	8	4	1	1
I June	12	11	8	6	10	8	6	4	8	6	4	2	7	5	3	1	6	4	2	1
II	13	10	7	5	11	8	5	3	9	6	3	1	8	5	2	1	7	4	1	1
I July	12	10	8	7	10	7	5	3	9	5	3	1	7	4	2	1	6	2	1	1
II	14	11	9	6	12	9	6	4	11	8	4	1	9	5	2	1	7	4	1	1
I Aug	10	8	6	4	7	5	3	1	5	3	1	1	4	2	1	1	3	1	1	0
II	13	10	7	5	11	7	4	2	10	6	2	1	8	4	1	1	6	3	1	0
I Sep	10	8	6	4	8	5	3	1	6	3	1	1	5	2	1	0	4	1	1	0
II	10	8	7	5	8	6	3	1	7	4	2	1	6	3	1	1	5	2	1	0

R = 841
r = 307

Falmer

I May	11	9	7	5	9	6	4	3	8	5	3	2	7	4	2	1	5	2	1	1
II	12	10	9	7	9	7	5	3	8	5	3	2	7	4	3	1	6	3	2	1
I June	12	10	7	6	10	7	6	4	8	5	3	2	7	4	2	1	5	3	1	1
II	12	10	8	6	9	8	5	3	8	6	3	1	7	5	2	1	5	3	1	1
I July	12	9	7	5	9	7	4	2	7	5	2	1	6	4	1	1	5	3	1	1
II	13	10	7	6	12	8	5	3	10	6	3	1	9	5	2	1	8	3	1	1
I Aug	10	8	6	4	7	5	3	2	5	3	1	1	4	2	1	1	3	1	1	1
II	13	10	7	5	11	7	4	2	9	5	2	1	8	4	1	1	7	2	1	1
I Sep	10	8	7	4	7	5	3	1	5	4	2	1	4	3	1	1	3	2	1	1
II	11	8	6	4	9	6	3	1	8	4	2	1	6	3	1	1	5	2	1	1

R = 899
r = 342

Table 4

Great Dixter

Sequence of work days:	1				2				3				4				5			
	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	11	9	7	6	9	6	5	4	8	5	3	2	7	3	2	1	6	2	1	0
II	13	11	9	7	10	9	6	3	8	6	5	2	7	4	3	1	6	3	2	1
I June	12	11	9	7	10	8	6	4	8	6	4	2	7	4	2	1	6	3	1	1
II	12	10	8	6	10	8	5	3	9	6	4	1	8	5	2	1	6	4	1	1
I July	12	9	8	6	9	6	4	3	7	4	3	1	6	3	2	1	4	2	1	1
II	13	11	9	7	11	8	5	3	9	6	3	1	8	4	2	1	7	3	1	0
I Aug	9	8	7	6	7	5	4	3	5	3	2	1	4	2	1	1	3	1	1	0
II	13	11	8	5	11	8	4	1	9	5	2	1	7	4	1	0	6	2	1	0
I Sep	10	8	6	4	8	5	3	2	6	4	2	1	5	3	1	1	5	2	1	0
II	10	9	6	4	8	6	3	1	6	3	1	1	5	2	1	1	4	1	1	0

R = 758
r = 288

Heathrow

I May	11	9	7	5	10	7	5	3	8	5	2	1	7	4	2	1	6	3	1	0
II	12	10	8	6	10	7	5	3	8	5	3	2	7	4	2	1	5	3	1	1
I June	12	10	8	7	9	7	5	3	7	4	3	1	6	3	2	1	5	1	1	0
II	12	10	9	6	9	8	5	3	8	6	4	2	6	4	2	1	5	3	1	1
I July	11	9	8	6	8	6	4	3	6	4	2	1	5	3	1	1	4	2	1	0
II	14	11	8	6	11	8	5	2	10	6	3	1	8	5	2	1	6	3	1	1
I Aug	10	7	6	4	7	5	3	1	6	4	1	1	5	2	1	1	3	1	1	0
II	13	10	8	5	11	7	4	2	9	6	2	1	9	4	1	1	7	3	1	0
I Sep	10	8	7	6	8	6	4	2	6	4	2	1	5	3	1	1	4	2	1	0
II	12	9	7	5	10	7	4	2	8	5	2	1	7	3	1	1	5	2	1	0

R = 617
r = 273

Horsham

Table 5

Sequence of work days:	1				2				3				4				5			
	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	12	9	7	5	10	7	4	2	8	6	3	1	7	4	2	1	6	3	1	1
II	13	11	8	6	10	8	5	3	9	6	4	2	7	4	2	1	6	3	2	1
I June	12	10	8	6	9	8	6	4	7	6	4	2	6	4	2	1	5	3	1	1
II	11	10	8	6	10	8	5	3	8	6	3	1	7	4	2	1	5	3	1	1
I July	11	10	8	6	9	7	5	3	7	5	3	1	5	4	1	1	4	3	1	0
II	14	11	8	6	12	9	5	3	10	6	3	1	8	5	2	1	7	3	1	1
I Aug	10	8	7	5	8	6	3	1	6	4	2	1	5	3	1	1	3	2	1	1
II	14	11	7	4	11	8	4	2	10	5	2	1	8	4	1	1	6	3	1	0
I Sep	10	9	7	5	8	6	4	2	6	4	2	1	5	3	1	1	4	2	1	0
II	12	9	6	5	10	7	4	2	7	4	2	1	6	3	1	1	5	2	1	0

R = 750
r = 293

Oxford

I May	10	8	6	4	9	6	4	2	7	4	2	1	6	3	1	1	4	2	1	0
II	12	9	7	5	9	7	4	2	8	5	3	1	6	4	2	1	4	3	1	1
I June	11	9	8	7	9	7	5	4	7	5	3	2	6	3	2	1	5	2	1	0
II	11	10	7	5	9	7	5	3	7	5	3	1	6	3	2	1	5	2	1	0
I July	10	8	7	6	7	5	4	3	5	3	2	1	4	2	1	1	3	1	1	0
II	14	11	7	5	11	7	4	2	9	5	2	1	8	4	1	1	6	3	1	0
I Aug	10	7	5	3	7	4	3	2	5	3	1	1	3	2	1	0	2	1	1	0
II	12	10	6	4	10	7	4	1	9	5	2	1	8	3	1	0	6	2	1	0
I Sep	9	7	6	5	7	5	3	2	6	3	1	1	4	2	1	0	3	1	1	0
II	12	9	6	4	9	6	3	1	7	4	2	1	6	3	1	1	4	2	1	0

R = 659
r = 293

Watford

Table 6

Sequence of work days:	1				2				3				4				5			
	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10	1 in 4	1 in 2	3 in 4	9 in 10
I May	11	8	7	5	9	5	4	3	8	4	2	1	6	3	1	1	5	2	1	0
II	12	10	8	6	10	8	5	3	8	6	3	1	7	4	2	1	5	3	1	1
I June	11	9	8	6	8	7	6	4	7	5	3	2	5	3	2	1	4	2	1	1
II	12	11	9	6	10	8	5	3	8	6	4	2	6	4	3	1	5	3	2	1
I July	11	9	7	6	9	6	4	2	6	4	2	1	5	3	1	1	4	2	1	0
II	13	10	8	6	11	7	5	3	9	5	2	1	8	4	1	1	6	3	1	0
I Aug	10	8	6	5	7	6	4	2	6	4	2	1	5	2	1	1	4	1	1	1
II	13	11	7	4	12	8	5	2	10	6	3	1	8	5	2	1	6	3	1	0
I Sep	10	8	7	6	8	5	4	2	6	4	2	1	5	3	1	1	4	1	1	0
II	12	9	7	6	10	7	4	2	8	5	2	1	7	3	1	1	5	2	1	0

R = 662
r = 287

Wisley

I May	10	9	7	5	8	6	5	3	7	4	3	1	6	3	1	1	5	2	1	0
II	12	10	8	6	10	7	5	3	8	6	3	2	7	4	2	1	5	3	1	1
I June	12	9	7	6	9	6	5	4	7	4	3	2	6	3	2	1	5	2	1	1
II	11	10	9	6	9	8	5	3	7	6	4	2	6	4	2	1	5	3	1	1
I July	11	9	8	6	8	6	4	3	6	3	2	1	5	2	1	1	3	1	1	0
II	13	11	8	6	12	8	5	3	10	6	3	1	8	4	2	1	7	3	1	0
I Aug	9	7	6	4	6	4	2	1	5	3	1	0	4	2	1	0	3	1	0	0
II	13	11	7	4	10	8	4	1	9	6	2	1	7	5	1	1	6	3	1	1
I Sep	10	8	7	6	8	6	4	2	6	4	2	1	5	2	1	1	4	1	1	0
II	10	8	6	5	8	5	4	2	6	3	2	1	5	2	1	1	4	1	1	0

R = 648
r = 270

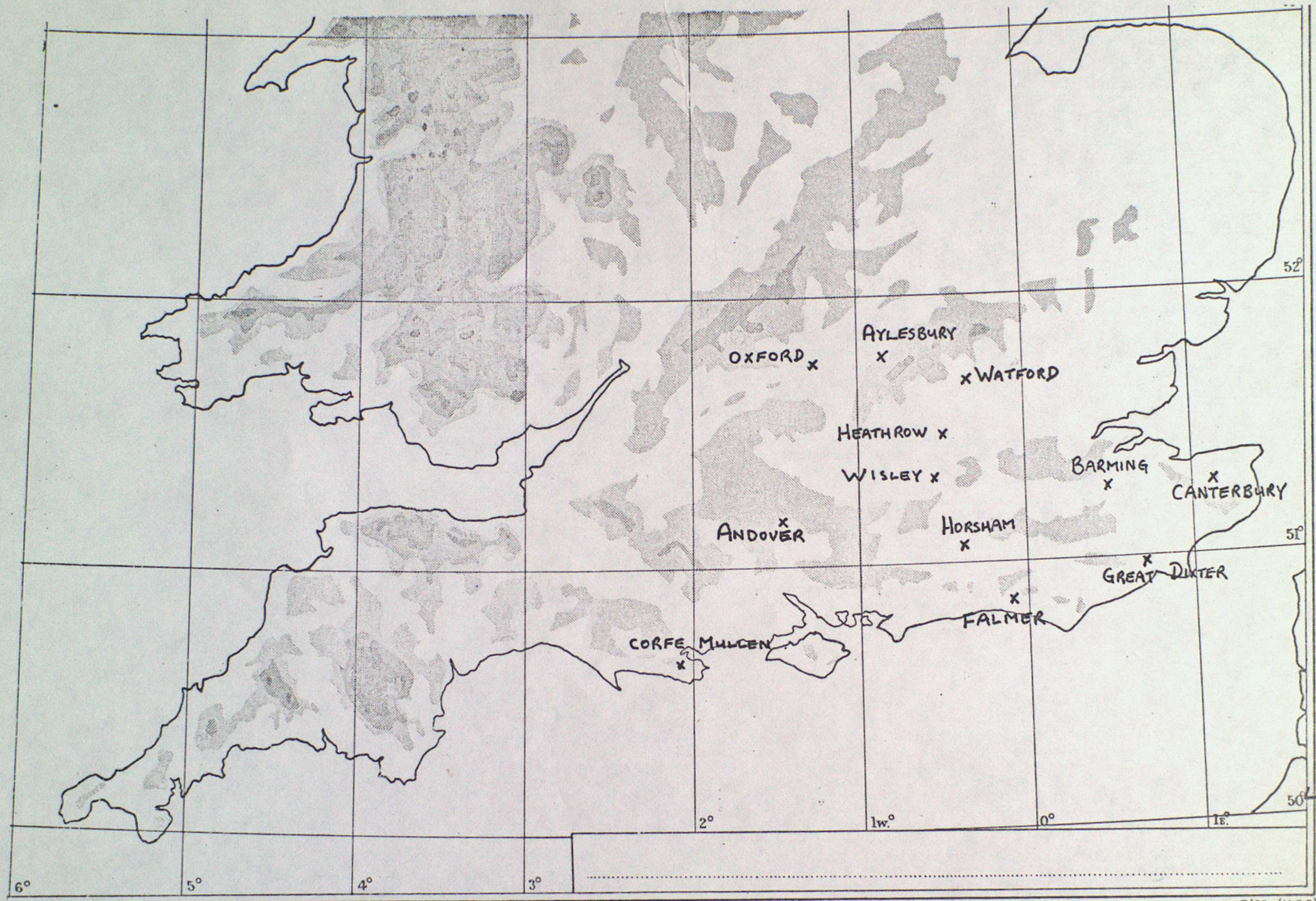

AYLESBURY
OXFORD
WATFORD
HEATHROW
WISLEY
BARMING
CANTERBURY
ANDOVER
HORSHAM
GREAT DIXTER
FALMER
CORFE MULLEN
52°
51°
50°
6°
5°
4°
3°
2°
1w.°
0°
1E.

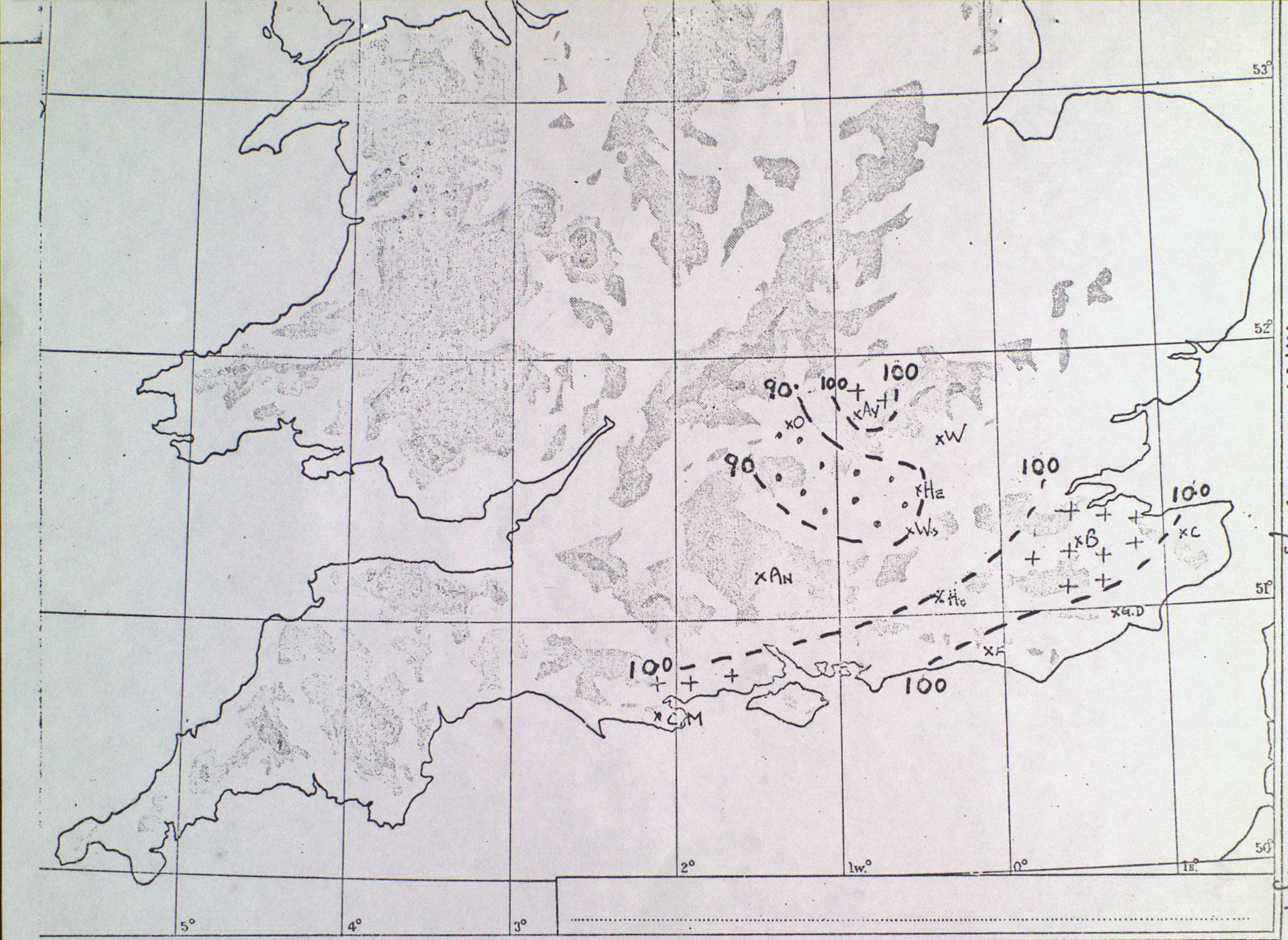
Fig 1

One Work-Day

Fig 2

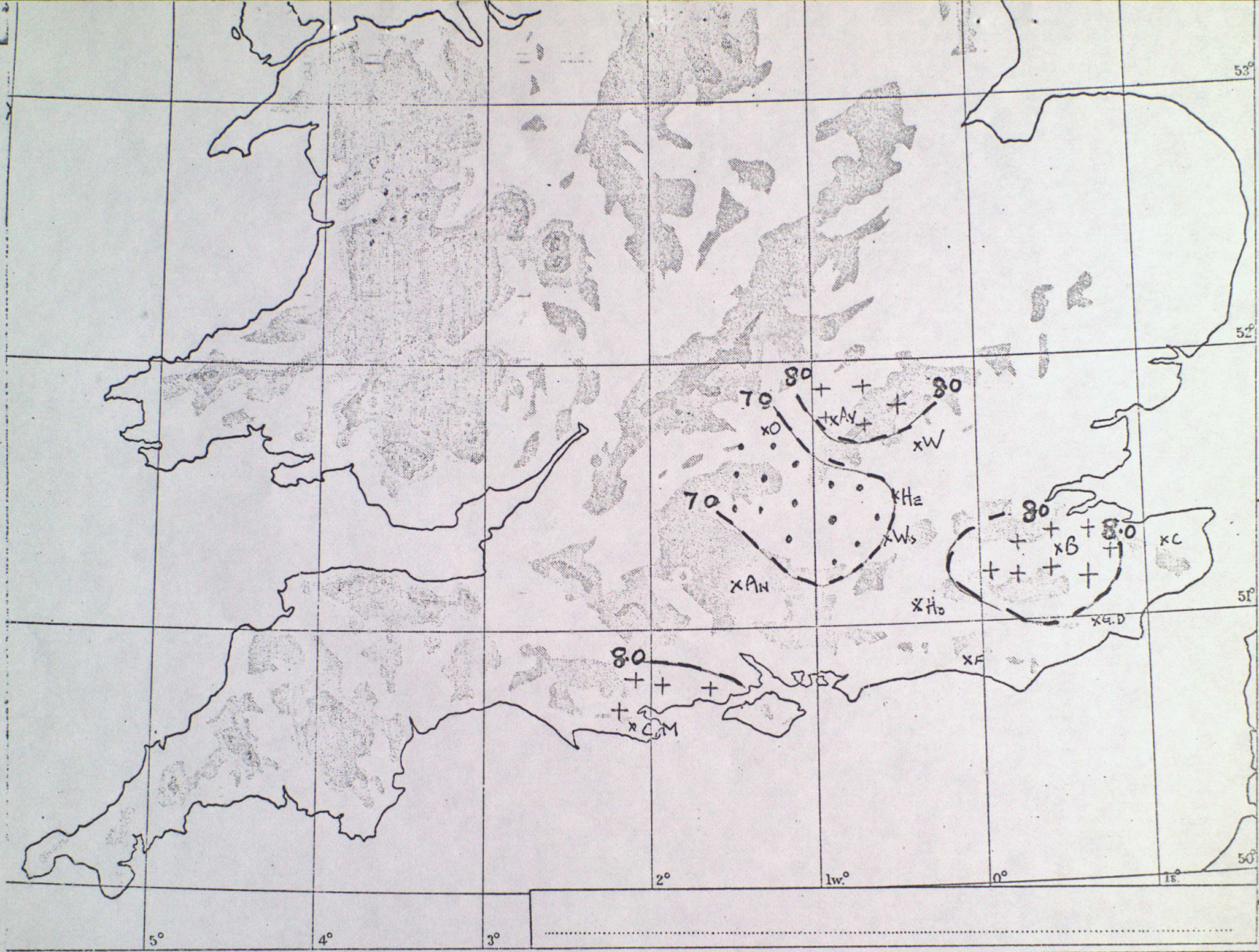
7/65 -(M.F.R)

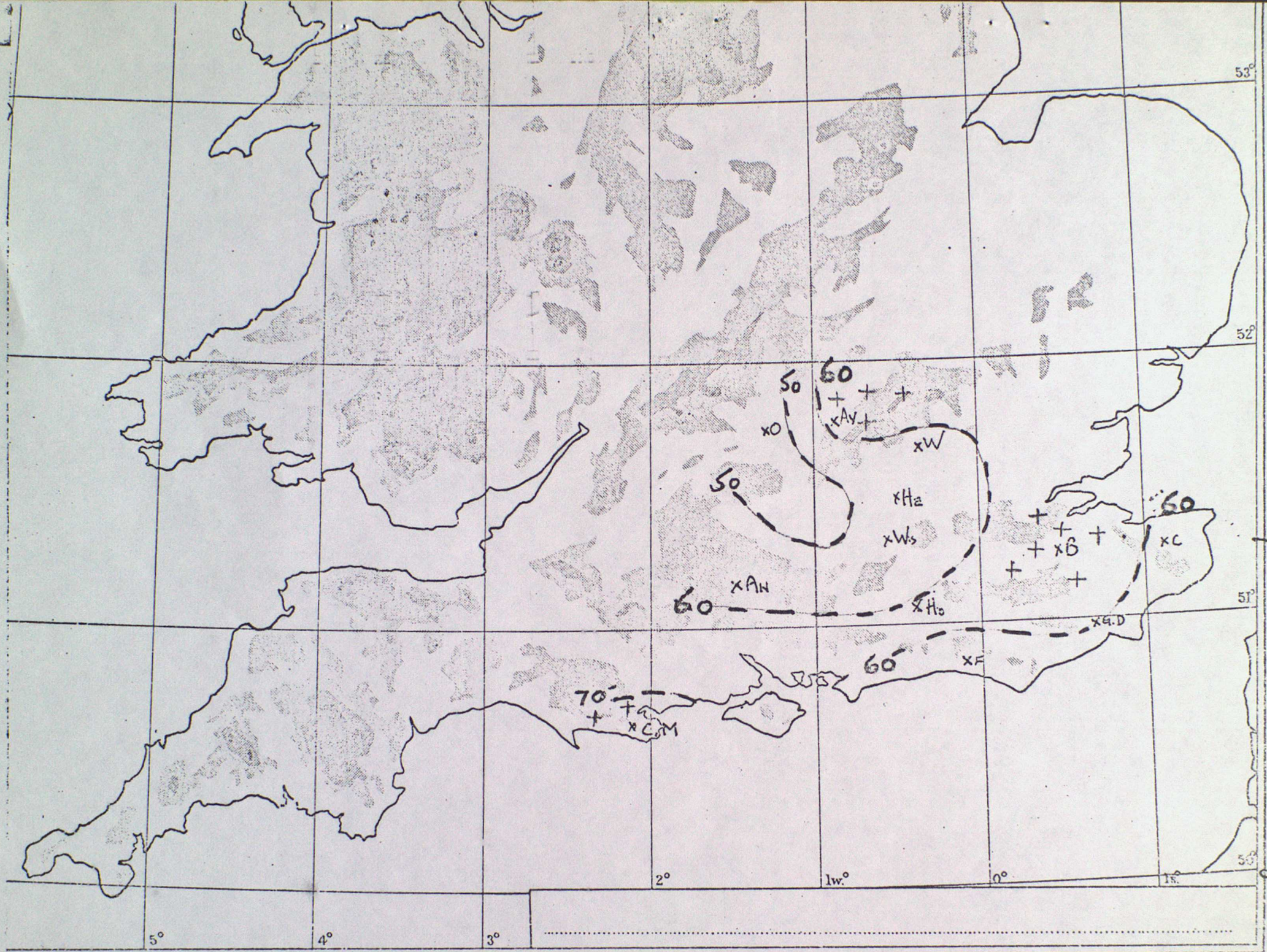
Two Work-Days
Fig 3
53°
52°
51°
5°
4°
3°
2°
1w.°
0°
1E.
120
130
130
130
120
xO
xAv
xW
xHE
xWs
xAN
xHs
xB
xC
xE.D
xF
xC.M
7/55 -(M.F.P.)



Three Work-Days

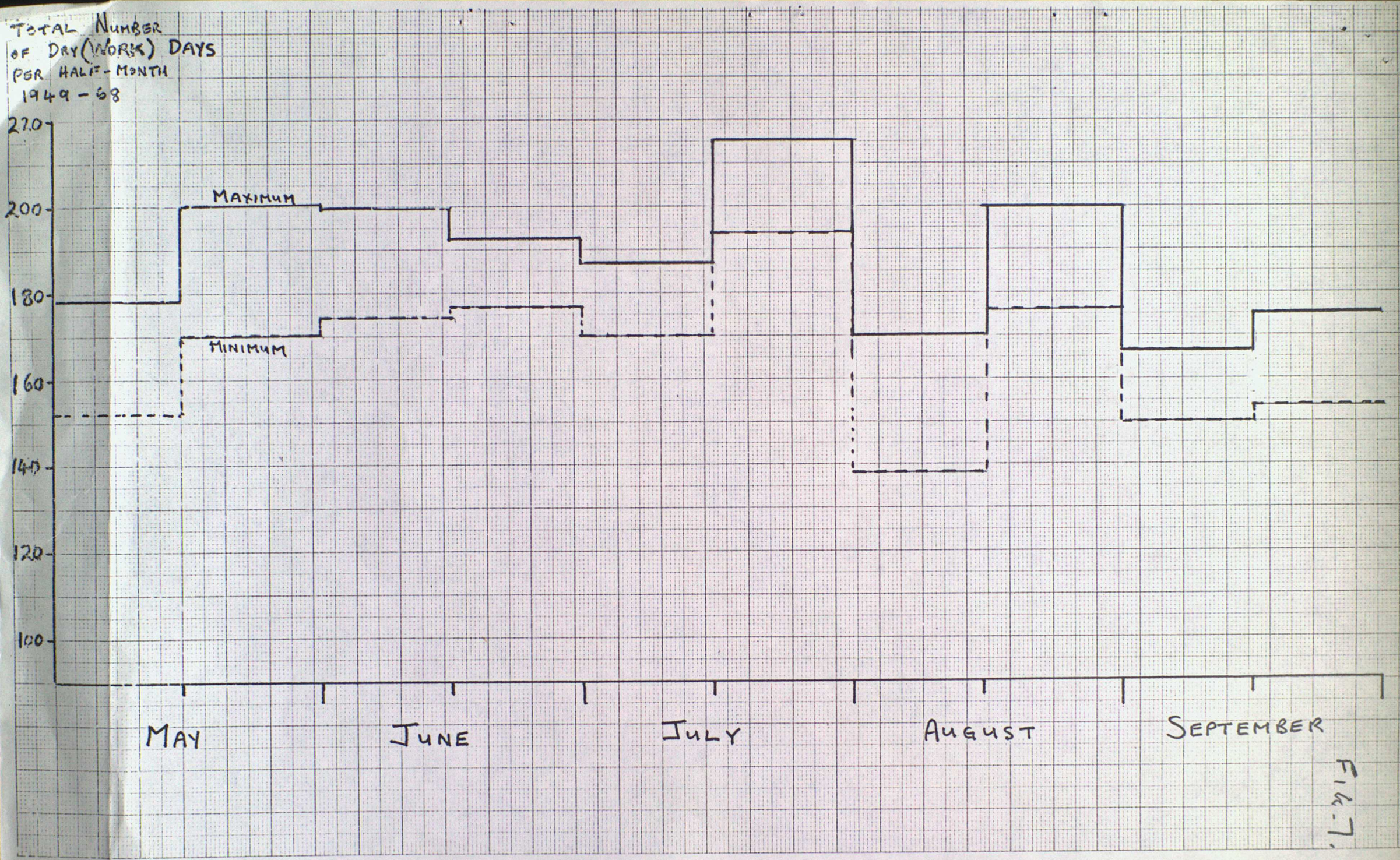
Fig 4


53°
52°
51°
50°
5°
4°
3°
2°
1w.°
0°
1E.
70
80
xO
xAW
xW
xHE
xWS
xAN
xHS
xB
xC
xE.D
xF
xC.M
Four Work-Days
Fig 5



Five Work-Days

Fig 6


TOTAL NUMBER
OF DRY (WORK) DAYS
PER HALF-MONTH
1949 - 68
220
200
180
160
140
120
100
MAXIMUM
MINIMUM
MAY
JUNE
JULY
AUGUST
SEPTEMBER

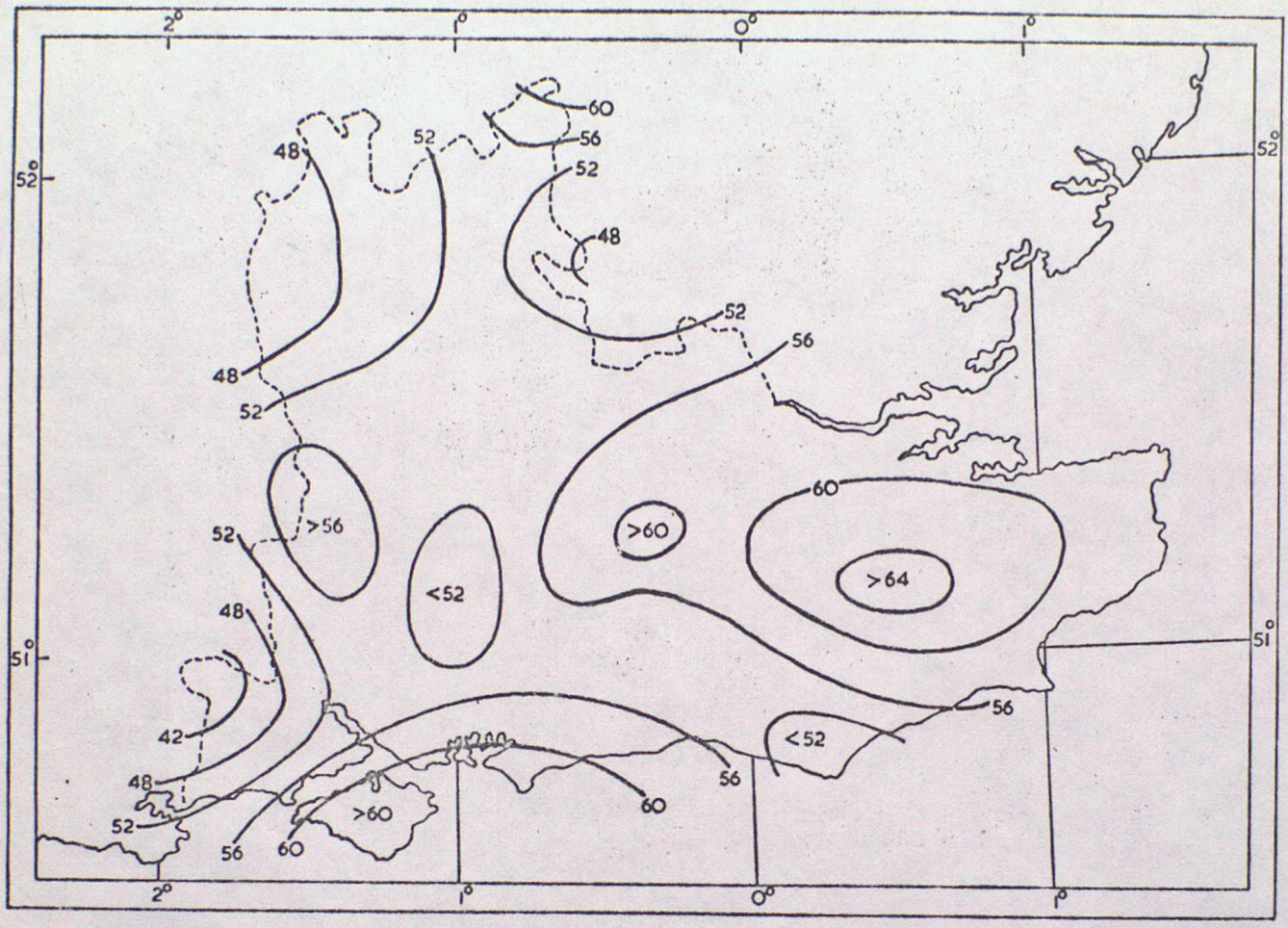


FIG. 8. JULY — 3 or more days